AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A communication method for a noncontact RF ID system that uses a first waveform, a second waveform, and a third waveform, wherein:

either one of the rising timing [[~~and~~]] or the falling timing of [[~~the~~]] a waveform output when communicating by using the first waveform, the second waveform, and the third waveform, becomes periodic.

2. (Currently Amended) The communication method for a noncontact RF ID system according to claim 1, wherein:

[[~~the~~]] a first waveform and [[~~the~~]] a second waveform are formed by a basic waveform that has one of a rising state transition and a falling state transition at the approximate center part of the waveform;

[[~~the~~]] a third waveform is formed by a plurality of basic waveforms that have said one state transition at the approximate center part of the waveform, and the third waveform is formed such that said one state transition occurs only at the approximate center part of the plurality of the waveforms; and

in the case in which said state transition occurs outside the approximate center of the basic waveform when communicating by using the first waveform and the second waveform, communication is carried out by using the third waveform in place of the first waveform and the second waveform.

3. (Currently Amended) The communication method for a noncontact RF ID system according to claim 2, wherein:

the third waveform is a waveform that is used in place of m waveforms (here, m is a natural number equal to or greater than 2) when one of the first waveform and the second waveform continues in succession and an identical rising or falling state transition which is occurred at the approximate center part of [[~~the~~]] a waveform is occurred at the connection part of the waveforms, and furthermore, a combination of the first waveform and the

second waveform that includes a connection part of the waveforms that produces the state transition, consists of m waveforms.

4. (Currently Amended) The communication method for a noncontact RF ID system according to claim 3, wherein:

in the case in which the state transition is rising, the first waveform is a waveform that maintains a low level in [[~~the~~]] a negative time direction for T/2 from the point in time that the waveform first rises, which is [[~~the~~]] a center point of the waveform, and maintains a high level state for T/2 in [[~~the~~]] a positive time direction from this center point;

the second waveform is a waveform that maintains a high level state in the positive time direction for t1 from [[~~the~~]] a point in time that the waveform first rises, which is the center point of the waveform, maintains a low level state for time t2 until [[~~the~~]] an end point of the waveform, maintains a low level state in the negative time direction for time t1 from the center point of the waveform, and maintains a high level state for time t2 until [[~~the~~]] a starting point of the waveform (here, t denotes time, T denotes one cycle of the first and second waveforms, and t1 + t2 = T/2); and

the third waveform is a C(2n) waveform which, in the case in which m=2n, maintains a high level state in the positive time direction for t6 from the point in time that the waveform first rises; maintains a low level state in the negative time direction for t3 from the point in time that the waveform first rises; maintains a high level state for time t4 until the starting point of the waveform; maintains a high level state in the positive time direction for t{2 (n - k) + 6} from the point in time that the waveform rises for the (n + 1 - k)th time; maintains a low level state for t {2 (n - k) + 3} in the negative time direction from the point in time that the waveform rises for the (n + 1 - k)th time; maintains a high level state in the positive time direction for T/2 from the point in time that the waveform rises for the nth time; maintains a low level state in the negative time direction for t{2 (n - 1) + 3} from the point in time that the waveform rises for the nth time; maintains a high level state in the positive time direction for t{2 (n - 1) +3} from the point in time that the waveform rises for the (n + 1)th time; maintains a low level state in the negative time direction for T/2 from the point in

time that the waveform rises for the (n + 1)th time; maintains a high level state in the positive time direction for t{2 (n - k) + 3} from the point in time that the waveform rises for the (n + k)th time; maintains a low level state in the negative time direction for t {2 (n - k) + 6} from the point in time that the waveform rises for the (n + k)th time; maintains a low level state in the negative time direction for t6 from the point in time that the waveform rises the last time; maintains a high level state in the positive time direction for t3 from the point in time that the waveform rises the last time; and maintains a low level state for time t4 until [[~~the~~]] <u>an</u> end point of the waveform, where n and k are natural numbers; n ≥ k ≥ 1; t is time; T is one cycle of the first and second waveforms; and t3 + t4 = T/2; t{2 (n - k) + 5} + t{2 (n - k) + 6} = T (when n and k ≥ 2); and

in the case in which m = 2n + 1, the third waveform is a C(2n + 1) waveform that maintains a high level state in the positive time direction for t6 from the point in time that the waveform first rises; maintains a low level state in the negative time direction for t3 from the point in time that the waveform first rises; maintains a high level state for t4 from the starting point of the waveform; maintains a high level state in the positive time direction for t{2 (n - k) + 6} from the point in time that the waveform rises for the (n + 1 - k)th time; maintains a low level state in the negative time direction for t{2 (n - k) + 3} from the point in time that the waveform rises for the (n + 1 - k)th time; maintains a high level state in the positive time direction for t{2 (n - 1) + 5} from the point in time that the waveform rises for the (n + 1)th time; maintains a low level state in the negative time direction for t{2 (n - 1) + 5} from the point in time that the waveform rises for the (n + 1)th time; maintains a high level state in the positive time direction for t{2 (n - k) + 3} from the point in time that the waveform rises for the (n + 1 + k)th time; maintains a low level state in the negative time direction for t{2 (n - k) + 6} from the point in time that the waveform rises for the (n + 1 + k)th time; maintains a low level state in the negative time direction for t6 from the point in time that the waveform rises the last time; maintains a high level state in the positive time direction for time t3 from the point in time that the waveform rises the last time; and maintains a low level state for t4 until the end point of the waveform; (where n and k are

natural numbers, n ≥ k ≥ 1, t is time, T is one cycle of the first and second waveforms, t3 + t4 = T/2, and t{2 (n - k) + 5} + t {2 (n - k) + 6} = T).

5. (Currently Amended) The communication method for a noncontact RF ID system according to claim 3, wherein:

in the case in which the state transition is a falling state transition, the first waveform is an inverted waveform that maintains a low level in [[~~the~~]] a negative time direction for T/2 from the point in time that the waveform first rises, which is [[~~the~~]] a center point of the waveform, and maintains a high level state for T/2 in the positive time direction from this center point;

the second waveform is an inverted waveform that maintains a high level state in the positive time direction for t1 from the point in time that the waveform first rises, which is the center point of the waveform, maintains a low level state for time t2 until the end point of the waveform, maintains a low level state in the negative time direction for time t1 from the center point of the waveform, and maintains a high level state for time t2 until the starting point of the waveform (here, t denotes time, T denotes one cycle of the first and second waveforms, and t1 + t2 = T/2); and

the third waveform is an inverted C(2n) waveform which, in the case in which m=2n, maintains a high level state in [[~~the~~]] a positive time direction for t6 from the point in time that the waveform first rises; maintains a low level state in the negative time direction for t3 from the point in time that the waveform first rises; maintains a high level state for time t4 until the starting point of the waveform; maintains a high level state in the positive time direction for t{2 (n - k) + 6} from the point in time that the waveform rises for the (n + 1 - k)th time; maintains a low level state for t {2 (n - k) + 3} in the negative time direction from the point in time that the waveform rises for the (n + 1 - k)th time; maintains a high level state in the positive time direction for T/2 from the point in time that the waveform rises for the nth time; maintains a low level state in the negative time direction for t{2 (n - 1) + 3} from the point in time that the waveform rises for the nth time; maintains a high level state in the positive time direction for t{2 (n - 1) +3} from the point in time that the waveform rises

for the (n + 1)th time; maintains a low level state in the negative time direction for T/2 from the point in time that the waveform rises for the (n + 1)th time; maintains a high level state in the positive time direction for t{2 (n - k) + 3} from the point in time that the waveform rises for the (n + k)th time; maintains a low level state in the negative time direction for t {2 (n - k) + 6} from the point in time that the waveform rises for the (n + k)th time; maintains a low level state in the negative time direction for t6 from the point in time that the waveform rises the last time; maintains a high level state in the positive time direction for t3 from the point in time that the waveform rises the last time; and maintains a low level state for time t4 until the end point of the waveform, where n and k are natural numbers; $n \geq k \geq 1$; t is time; T is one cycle of the first and second waveforms; and t3 + t4 = T/2; t{2 (n - k) + 5} + t{2 (n - k) + 6} = T (when n and k ≥ 2); and

in the case in which m = 2n + 1, the third waveform is an inverted C(2n + 1) waveform that maintains a high level state in the positive time direction for t6 from the point in time that the waveform first rises; maintains a low level state in the negative time direction for t3 from the point in time that the waveform first rises; maintains a high level state for t4 from the starting point of the waveform; maintains a high level state in the positive time direction for t{2 (n - k) + 6} from the point in time that the waveform rises for the (n + 1 - k)th time; maintains a low level state in the negative time direction for t{2 (n - k) + 3} from the point in time that the waveform rises for the (n + 1 - k)th time; maintains a high level state in the positive time direction for t{2 (n - 1) + 5} from the point in time that the waveform rises for the (n + 1)th time; maintains a low level state in the negative time direction for t{2 (n - 1) + 5} from the point in time that the waveform rises for the (n + 1)th time; maintains a high level state in the positive time direction for t{2 (n - k) + 3} from the point in time that the waveform rises for the (n + 1 + k)th time; maintains a low level state in the negative time direction for t{2 (n - k) + 6} from the point in time that the waveform rises for the (n + 1 + k)th time; maintains a low level state in the negative time direction for t6 from the point in time that the waveform rises the last time; maintains a high level state in the positive time direction for time t3 from the point in time that the waveform rises the last time; and maintains a low level state for t4 until the end point of the waveform; (where n

and k are natural numbers, $n \geq k \geq 1$, t is time, T is one cycle of the first and second waveforms, $t3 + t4 = T/2$, and $t\{2(n - k) + 5\} + t\{2(n - k) + 6\} = T$).

6. (Original) The communication method for a noncontact RF ID system according to any one of claims 2 to 5, wherein:

communication is carried out by assigning a code "1" and a code "0" to the first waveform and the second waveform, and assigning a combination of the code "1" and the code "0" associated with the combination to the third waveform, which is used in place of the combination of the first waveform and the second waveform.

7. (Currently Amended) A noncontact RF ID system which uses the communication method according to any one of claims 1 to 5, comprising:

a reader for reading data information that include data and a clock from the transponder,

the transponder comprising an antenna for receiving the signal from a reader, a DC power detecting circuit; a signal detecting circuit, an input amplifier, and a clock generating device, a demodulator, a control logic circuit, and a memory, wherein

the DC power detecting circuit comprising a power accumulating capacitor that activates the transponder when a signal is received;

[[~~a~~]]the clock generating device that generates an internal clock such that the state transition of the internal clock is generated in synchronism with the timing of the rise of the modulating signal; and

[[~~a~~]]the control logic circuit that operates in synchronism with the state transition of the clock generated by the clock generating device.

8. (Currently Amended) A transmitter in the noncontact RF ID system according to claim 7, that forms and transmits data information comprising a first waveform, a second waveform, and a third waveform, wherein:

the first waveform and the second waveform are formed by a basic waveform that has a state transition that either rises or falls at the approximate center part of the waveform;

the third waveform is formed by a plurality of basic waveforms that have one state transition at the approximate center part of the waveform and said one state transition is generated only at the approximate center part of the plurality of basic waveforms; and

transmission is carried out by using the third waveform in place of the first waveform and the second waveform in the case in which transmission is carried out using the first waveform and the second waveform and in the case in which said one state transition is generated outside the approximate center part of the waveform.

9. (Currently Amended) A receiver in the noncontact RF ID system according to claim 7, that receives data information comprising a [[~~the~~]] first waveform and [[~~the~~]]a second waveform, and [[~~the~~]]a third waveform,

wherein, the first waveform and the second waveform are formed by a basic waveform that has a state transition that either rises or falls at the approximate center part of the waveform;

the third waveform is formed by a plurality of basic waveforms that have one state transition at the approximate center part of the waveform and the one state transition is generated only at the approximate center part of the plurality of basic waveforms; and

in the case in which the third waveform is received, the receiver recognizes the reception of a combination of the first waveform and the second waveform in which said one state transition has occurred outside the approximate center of the basic waveform.

10. (New) A method of transmitting and receiving modulated data information comprising a first waveform, a second waveform, and a third waveform, in the noncontact RF ID system according to claim 7, comprising the steps of:

transmitting modulated signals including data information and clock information from a reader to a transponder;

detecting the modulated signals by the signal detecting circuit of a transponder;

dividing the signal into the data information and the clock by the clock generating circuit and the demodulator;

analyzing the data information comprising a first waveform, a second waveform and a third waveform by the control logic circuit; and

responding to the reader a data after forming the data information in the transponder, when necessary.